

## WHAT IS CLAIMED IS:

- 1        1. An apparatus comprising:  
2              a substrate with holes embossed therein; and  
3              carbon nanotubes deposited in the holes.
- 1        2. The apparatus as recited in claim 1, further comprising:  
2              a conductive layer within the substrate electrically connecting at least a  
3              portion of the carbon nanotubes within a plurality of the holes.
- 1        3. The apparatus as recited in claim 2, further comprising:  
2              a gate electrode coextensive with the substrate.
- 1        4. The apparatus as recited in claim 2, a material for affixing the carbon  
2              nanotubes within the holes.
- 1        5. The apparatus as recited in claim 3, further comprising:  
2              an anode positioned a distance from the substrate, having a phosphor for  
3              emitting photons in response to bombardment from electrons emitted by the carbon  
4              nanotubes.

1           6.       The apparatus as recited in claim 5, further comprising:  
2           circuitry for causing the electrons to be emitted by the carbon nanotubes.

1           7..     A data processing system comprising:  
2               a processor;  
3               a memory device;  
4               a storage device;  
5               an input device;  
6               a display device; and  
7               a bus system for coupling the processor to the memory device, the storage  
8               device, the input device, and the display device, wherein the display device further  
9               comprises:  
10              a substrate with holes embossed therein; and  
11              carbon nanotubes deposited in the holes.

1           8.     The data processing system as recited in claim 7, further comprising:  
2               a conductive layer within the substrate electrically connecting at least a  
3               portion of the carbon nanotubes within a plurality of the holes.

1           9.     The data processing system as recited in claim 8, further comprising:  
2               a gate electrode coextensive with the substrate.

1           10.    The data processing system as recited in claim 8, further comprising:  
2               a gate electrode coextensive with the substrate.

1           11. The data processing system as recited in claim 9, further comprising:  
2           an anode positioned a distance from the substrate, having a phosphor for  
3           emitting photons in response to bombardment from electrons emitted by the carbon  
4           nanotubes.

1           12. The data processing system as recited in claim 11, further comprising:  
2           circuitry for causing the electrons to be emitted by the carbon nanotubes.

1           13. A method for making a field emission device, comprising the steps of:  
2           providing a substrate;  
3           embossing holes into the substrate; and  
4           depositing carbon nanotubes into the embossed holes so that substantially all  
5           of the carbon nanotubes are positioned with their axes substantially parallel with long  
6           axes of the embossed holes.

1           14. The method as recited in claim 13, wherein the depositing step further  
2           comprises the steps of:  
3           depositing on the substrate a solution containing the carbon nanotubes; and  
4           causing the carbon nanotubes to fall into the embossed holes.

1           15. The method as recited in claim 14, further comprising the step of:  
2           positioning one or more conductive layers at the bottoms of the holes so that  
3           the carbon nanotubes electrically contact the one or more conductive layers.

1           16. The method as recited in claim 15, further comprising the step of:  
2           positioning a gate electrode in proximity to the substrate.

1           17. The method as recited in claim 16, further comprising the step of:  
2           positioning an anode with a phosphor a distance from the substrate.

1           18. The method as recited in claim 17, further comprising the step of:  
2           connecting a voltage potential to the anode and the conductive layer.